(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization International Bureau



20 JUL 2005

(43) International Publication Date 7 July 2005 (07.07.2005)

PCT

(10) International Publication Number WO 2005/062666 A1

(51) International Patent Classification⁷: 31/00, H01L 41/08

H04R 17/00.

(21) International Application Number:

PCT/US2004/033627

(22) International Filing Date: 12 October 2004 (12.10.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data: 60/529,445

12 December 2003 (12.12.2003) U

(71) Applicant (for all designated States except US): BAE SYSTEMS INFORMATION AND ELECTRONIC SYSTEMS INTEGRATION INC. [US/US]; 65 Spit Brook Road, NHQ01-719, Nashua, NH 03060 (US).

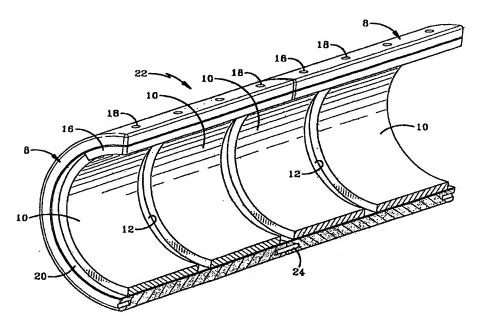
(72) Inventors; and

(75) Inventors/Applicants (for US only): DEANGELIS, Matthew, M. [US/US]; 214 Back River Road, Bedford, NH 03110 (US). OSBORN, Jason, W. [US/US]; 14 Bloody Brook Road, Amherst, NH 03031 (US).

- (74) Agent: LONG, Daniel, J.; BAE Systems Information and Electronic Systems Integration Inc., 65 Spit Brook Road, NHQ01-719, Nashua, NH 03060 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI,

[Continued on next page]

(54) Title: ACOUSTIC PROJECTOR AND METHOD OF MANUFACTURE



(57) Abstract: An underwater acoustic projector comprising one or more cylindrical shell segments (8), each shell segment (8) having an even number of drivers (10) mounted therein, and the method of manufacturing said projector. The shell segments (8) preferably are formed with a longitudinal slot (14) and have arcuate segments (16), preferably of a dielectric material extending along the sides of the slot (14) for retaining the drivers (10) within the shell segments (8). The combined lengths of the driver is between 70% and 90% of the shell segment (8) length.



SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Declarations under Rule 4.17:

- as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)
- as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii)) for the following designations AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ,

EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, UZ, VC, VN, YU, ZA, ZM, ZW, ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG)

of inventorship (Rule 4.17(iv)) for US only

Published:

- with international search report
- before the expiration of the time limit for amending the claims and to be republished in the event of receipt of amendments

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.



International application No.

PCT/US04/33627

A. CLA	SSIFICATION OF SUBJECT MATTER		
IPC(7)	: H04R 17/00, 31/00; H01L 41/08		
US CL	: 367/142, 159, 162, 169, 176; 310/337, 29/	594	
According to International Patent Classification (IPC) or to both national classification and IPC			
B. FIELDS SEARCHED			
Minimum documentation searched (classification system followed by classification symbols)			
U.S.: 367/141, 142, 159, 162, 169, 176; 310/337			
l			
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched			
			- m are notes scatched
ļ			•
Electronia da	to have an arrival at 1		
Fact text Tar	ata base consulted during the international search (Dio, Derwent, PG-Pubs, USPAT	name of data base and, where practicable, s	earch terms used)
Last text, Jaj	no, Derwent, PG-Puos, USPAT		-
C. DOCI	UMENTS CONSIDERED TO BE RELEVANT		· · · · · · · · · · · · · · · · · · ·
Category *	Citation of document with indication where		
X	Citation of document, with indication, where	appropriate, of the relevant passages	Relevant to claim No.
	US 5,239,518 A (KAZMAR) 24 August 1993 (10-42.	(24.08.1993), see Fig. 4 and col. 9, lines	1, 2, 3, 5, 7, 8 and 9
Y		000 447 04 1000	
•	US 5,220,538 A (FLANAGAN et al) 15 June 1993 (15.06.1993), see Figs. 2 and 2A 4, 6 and 10-14		
A	US 5.103.130 A (ROLT et al.) 07 April 1002 (77.04.1000	
	US 5,103,130 A (ROLT et al) 07 April 1992 (77.04.1992), see Figs. 3, 4, 6 and 7	1-14
	•		
- 1			
		ĺ	
İ			
1			
}			
1			
		1	
		į	
		j	
		1	
j		į	
ŀ			
	<u> </u>		
	documents are listed in the continuation of Box C.	See patent family annex.	
Spe	cial categories of cited documents:		
		priority date and not in conflict with a	ha condication but also to
be of partic	defining the general state of the art which is not considered to	understand the principle or theory und	erlying the invention
-			
E" earlier appl	lication or patent published on or after the international filing	document of particular relevance; the considered novel or cannot be considered	claimed invention cannot be
date		step when the document is taken alone	ed to myorve an inventive
L" document v	which may throw doubts on priority claim(s) or which is cited		
to establish	the publication date of another citation or other special reason	document of particular relevance; the considered to involve an inventive step	laimed invention cannot be
(as specifie	a)	COMDINED WITH ONE OF MORE Other such	documents and
O" document re	eferring to an oral disclosure, use, exhibition or other means	combination being obvious to a person	skilled in the art
		"&" document member of the same patent fa	
	ublished prior to the international filing date but later than the	and a same parent is	mily
Date of the act	ual completion of the international search	Date of mailing of the interesting	1.
1		Date of mailing of the international search report	
20 April 2005 (20.04.2005)		05 MAY 2005	
Name and mailing address of the ISA/US		Authorized officer	
Mail Stop PCT, Attn: ISA/US			
Commissioner for Patents		Ian J. Lobo V (+ x)	
P.O. Box 1450 Alexandria, Virginia 22313-1450			
acsimile No	(703) 305-3230	Telephone No. (571) 272-6974	
m LC 1/194/7	210 (second sheet) (January 2004)		